

IN THE CLAIMS:

1 1. (PREVIOUSLY PRESENTED) A method of operating a switch for frames in a com-
2 puter network, comprising:

3 receiving a frame (received frame) at a port of said switch, said received frame
4 containing one or more indicia of frame type, said one or more indicia of frame type in-
5 cluding an indicia of a protocol type;

6 accessing a virtual local area network (VLAN) value associated with the port;

7 deriving a virtual local area network (derived VLAN) value in response to said
8 one or more indicia of frame type and said VLAN value, said derived VLAN value for
9 use internal to said switch;

10 accessing a forwarding database with said derived VLAN value to determine a
11 destination address; and,

12 forwarding, in response to said derived VLAN value, said received frame to an
13 output port for transmission to the destination address.

1 2-3. (CANCELLED)

1 4. (PREVIOUSLY PRESENTED) The method of claim 1 wherein said indicia of frame
2 type further comprises:

3 a subnet value.

1 5-7. (CANCELLED)

1 8. (PREVIOUSLY PRESENTED) The method of claim 1 further comprising:
2 deriving a MAC address from said derived VLAN value and forwarding said re-
3 ceived frame to the output port for transmission to a destination having said MAC ad-
4 dress.

1 9. (PREVIOUSLY PRESENTED) An apparatus to forward frames in a computer net-
2 work, comprising:
3 a port to receive a frame (received frame), said port associated with a virtual local
4 area network (VLAN) value, said received frame containing one or more indicia of frame
5 type, said one or more indicia of frame type including an indicia of a protocol type;
6 a parsing engine to derive a virtual local area network (derived VLAN) value in
7 response to said one or more indicia of frame type and said VLAN value, said derived
8 VLAN value for use internal to said switch;
9 a forwarding database configured to use said derived VLAN value as an input and
10 to yield a destination address as an output; and,
11 an output port to transmit said received frame, in response to said derived VLAN
12 value, to said destination address.

1 10. (ORIGINAL) The apparatus as in claim 9 further comprising:
2 a forwarding engine for forwarding said received frame in response to said de-
3 rived VLAN value and said destination address.

1 11. (PREVIOUSLY PRESENTED) A computer readable media containing instructions
2 for the practice of operating a switch for frames in a computer network, comprising:

3 receiving a frame (received frame) at a port of said switch, said received frame
4 containing one or more indicia of frame type, said one or more indicia of frame type in-
5 cluding an indicia of a protocol type;
6 accessing a virtual local area network (VLAN) value associated with the port;
7 deriving a virtual local area network (derived VLAN) value in response to said
8 one or more indicia of frame type and said VLAN value, said derived VLAN value for
9 use internal to said switch;
10 accessing a forwarding database with said derived VLAN value to determine a
11 destination address; and,
12 forwarding, in response to said derived VLAN value, said received frame to an
13 output port for transmission to the destination address.

1 12-17. (CANCELLED)

1 18. (PREVIOUSLY PRESENTED) A method of operating a switch for frames in a com-
2 puter network, comprising:

3 receiving a frame (received frame) at a port of said switch, said received frame
4 containing one or more indicia of frame type, said one or more indicia of frame type in-
5 cluding an indicia of a protocol type;
6 accessing a port index value associated with the port;
7 deriving a virtual local area network (derived VLAN) value in response to said
8 one or more indicia of frame type and said port index value;
9 accessing a forwarding data base with said derived VLAN value to determine a
10 destination address; and,
11 forwarding, in response to said derived VLAN value, said received frame to an
12 output port for transmission to the destination address.

1 19. (PREVIOUSLY PRESENTED) An apparatus to forward frames in a computer net-
2 work, comprising:
3 a port to receive a frame (received frame), said port associated with a index value,
4 said received frame containing one or more indicia of frame type, said one or more indi-
5 cia of frame type including an indicia of a protocol type;
6 a parsing engine to derive a virtual local area network (derived VLAN) value in
7 response to said one or more indicia of frame type and said index value;
8 a forwarding database configured to use said derived VLAN value as input and to
9 yield a destination address as output; and,
10 an output port to transmit said received frame, in response to said derived VLAN
11 value, to said destination address.

1 20. (PREVIOUSLY PRESENTED) An apparatus to forward frames in a computer net-
2 work, comprising:
3 means for receiving a frame (received frame), said received frame containing one
4 or more indicia of frame type, said one or more indicia of frame type including an indicia
5 of a protocol type;
6 means for accessing a index value associated with the means for receiving a
7 frame;
8 means for deriving a virtual local area network (derived VLAN) value in response
9 to said one or more indicia of frame type and said index value;
10 means for accessing a forwarding database with said derived VLAN value to de-
11 termine a destination address; and,
12 means for forwarding, in response to said derived VLAN value, said received
13 frame to an output port for transmission to the destination.

1 21-23. (CANCELLED)

1 24. (PREVIOUSLY PRESENTED) The method of claim 1 wherein the step of deriving
2 further comprises:
3 generating a protocol code from the indicia of protocol type;
4 combining the protocol code with the VLAN value to produce a mapping address;
5 and
6 accessing a memory structure with the mapping address to obtain the derived
7 VLAN value.

1 25. (PREVIOUSLY PRESENTED) The method of claim 1 wherein the indicia of proto-
2 col type indicates an Internet Protocol (IP) protocol type.

1 26. (PREVIOUSLY PRESENTED) The apparatus as in claim 9 further comprising:
2 a protocol mapping table to map the indicia of protocol type to a protocol code;
3 and
4 wherein the parsing engine is configured to combine the protocol code with the
5 VLAN value to produce a mapping address and to access a memory structure with the
6 mapping address to obtain the derived VLAN.

1 27. (PREVIOUSLY PRESENTED) The apparatus as in claim 9 wherein the indicia of
2 protocol type indicates an Internet Protocol (IP) protocol type.

1 28. (PREVIOUSLY PRESENTED) The method of claim 18 wherein the step of deriv-
2 ing further comprises:
3 generating a protocol code from the indicia of protocol type;
4 combining the protocol code with the index value to produce a mapping address;
5 and
6 accessing a memory structure with the mapping address to obtain the derived
7 VLAN.

1 29. (PREVIOUSLY PRESENTED) The method of claim 18 wherein the indicia of pro-
2 tocol type indicates an Internet Protocol (IP) protocol type.

1 30. (PREVIOUSLY PRESENTED) The apparatus as in claim 19 further comprising:
2 a protocol mapping table to map the indicia of protocol type to a protocol code;
3 and
4 wherein the parsing engine is configured to combine the protocol code with the
5 index value to produce a mapping address and to access a memory structure with the
6 mapping address to obtain the derived VLAN.

1 31. (PREVIOUSLY PRESENTED) The apparatus as in claim 19 wherein the indicia of
2 protocol type indicates an Internet Protocol (IP) protocol type.

1 32. (CURRENTLY AMENDED) A method comprising:
2 receiving a frame at a input port, the frame including a protocol type;
3 accessing a virtual local area network (VLAN) value associated with the input
4 port;
5 associating the frame with a protocol code based on the frame's protocol type;

concatenating the protocol code together with the VLAN value to produce a mapping address;

applying the mapping address to a memory structure to obtain a derived VLAN value that is based upon both the frame's protocol type and the VLAN value associated with the input port, the derived VLAN value to differ ~~from~~ from at least one other derived VLAN value for another frame received on the input port, but having a different protocol type;

accessing a forwarding database with the derived VLAN value to determine a destination address; and

forwarding the frame to an output port for transmission to the destination address.

33. (PREVIOUSLY PRESENTED) The method of claim 32 wherein the step of associating further comprises:

mapping the protocol type to a protocol code using a protocol mapping table.

34. (PREVIOUSLY PRESENTED) The method of claim 32 wherein the frame includes the protocol type in a protocol type field.

35. (PREVIOUSLY PRESENTED) The method of claim 32 wherein the protocol type indicates Internet Packet Exchange (IPX) protocol.

36. (CURRENTLY AMENDED) An apparatus comprising:

an input port to receive a frame, the frame including a protocol type, the input port associated with a virtual local area network (VLAN) value;

a protocol mapping table to map the frame's protocol type to a protocol code;

an engine to concatenate the protocol code together with the VLAN value to produce a mapping address, and to apply the mapping address to a memory structure to ob-

tain a derived VLAN value that is based upon both the frame's protocol type and VLAN value associated with the input port, the derived VLAN value to differ ~~from~~ from at least one other derived VLAN value for another frame received on the input port, but having a different protocol type;

a forwarding database to use the derived VLAN value to determine a destination address; and

an output port to transmit the frame to the destination address.

37. (PREVIOUSLY PRESENTED) The apparatus of claim 36 wherein the frame includes the protocol type in a protocol type field.

38. (PREVIOUSLY PRESENTED) The apparatus of claim 36 wherein the protocol type indicates Internet Packet Exchange (IPX) protocol.

39. (CURRENTLY AMENDED) A method comprising:

receiving a frame at a input port, the frame including a protocol type and a source address;

in response to the protocol type indicating a particular protocol type, parsing the source address to obtain a subnet value;

applying the subnet value to a memory structure to map the subnet value to a derived VLAN value, the derived VLAN value to differ ~~from~~ from at least one other derived VLAN value for another frame received on the input port, but having a different subnet value;

accessing a forwarding database with the derived VLAN value to determine a destination address; and,

forwarding the frame to an output port for transmission to the destination address.

1 40. (PREVIOUSLY PRESENTED) The method of claim 39, wherein the particular pro-
2 tocol type is Internet Protocol (IP).

1 41. (CURRENTLY AMENDED) An apparatus comprising:
2 an input port to receive a frame, the frame including a protocol type and a source
3 address;
4 an engine to, in response to the protocol type indicating a particular protocol type,
5 parse the source address to obtain a subnet value, and to apply the subnet value to a
6 memory structure to map the subnet value to a derived VLAN value, the derived VLAN
7 value to differ ~~from~~ from at least one other derived VLAN value for another frame re-
8 ceived on the input port, but having a different subnet value;
9 a forwarding database to use the derived VLAN value to determine a destination
10 address; and
11 an output port to transmit the frame to the destination address.

1 42. (PREVIOUSLY PRESENTED) The apparatus of claim 41, wherein the particular pro-
2 tocol type is Internet Protocol (IP).